

CLAIMS

We claim:

- 5 1. An absorbent article comprising:
 - (a) an outer cover;
 - (b) a liquid permeable bodyside liner that defines a bodyfacing surface and that is connected in superposed relation to the outer cover;
 - (c) an absorbent body that is located between the bodyside liner and the outer
 - 10 cover; and
 - (d) a composition on at least a portion of the bodyfacing surface of the bodyside liner that includes from about 10 to about 90 weight percent of hydrophilic solvent, from about 10 to about 90 percent by weight of high molecular weight polyethylene glycol, from about 0 to about 40 percent by weight of C₁₄ to C₃₀ fatty
 - 15 alcohol, from about 0 to about 40 percent by weight of C₁₄ to C₃₀ fatty acid and from about 0.1 to about 20 percent by weight of decoupling polymer.
2. The absorbent article of claim 1, wherein the composition has a high shear viscosity less than about 5,000 centipoise at a temperature greater than about 60°C and has a
- 20 low shear viscosity greater than about 50,000 centipoise at a temperature of about 55°C.
3. The absorbent article of claim 1, wherein the hydrophilic solvent of the composition is
- 25 selected from water, propylene glycol, low molecular weight polyethylene glycol, glycerin, hydrogenated starch hydrolysate, methoxyisopropanol, PPG-2 propyl ether, PPG-2 butyl ether, PPG-2 methyl ether, PPG-3 methyl ether, dipropylene glycol propyl ether, dipropylene glycol butyl ether, dipropylene glycol, methyl propanediol, propylene carbonate, water soluble/dispersible polypropylene glycols, ethoxylated polypropylene
- 30 glycol, sorbitol, silicone glycols and mixtures thereof.
4. The absorbent article of claim 1, wherein the molecular weight of the high molecular weight polyethylene glycol is from about 720 to about 1,840,000 daltons.
- 35 5. The absorbent article of claim 1, wherein the molecular weight of the high molecular weight polyethylene glycol is from about 1,400 to about 440,000 daltons.

6. The absorbent article of claim 1, wherein the fatty alcohol of the composition is selected from cetyl alcohol, stearyl alcohol, arachidyl alcohol, behenyl alcohol and mixtures thereof.
7. The absorbent article of claim 1, wherein the decoupling polymer of the composition is selected from homopolymers of acrylic acid, acrylic acid/maleic acid copolymers, poly(2-hydroxyethylacrylate), polysaccharides, cellulose ethers, polyglycerols, polyacrylamides, polyvinyl alcohol/polyvinyl ether copolymers, poly(sodium vinyl sulfonate), poly(2-sulphato ethyl methacrylate), poly(acrylamidomethyl propane sulphonate) and mixtures thereof.
8. The absorbent article of claim 1, wherein the composition further includes from about 0.1 to about 20 percent by weight of viscosity enhancer.
9. The absorbent article of claim 8, wherein the viscosity enhancer is selected from acrylamides copolymers, agar, gelatin, water dispersible metal soaps, butoxy chitosan, carboxymethyl cellulose, hydrated silica, kelp, magnesium silicate, alumina magnesium silicate, smectite, organomodified clays, methyl cellulose, PEG crosspolymer, polyvinyl alcohols, sodium acrylates copolymers, partially crosslinked polyacrylic acid polymers, TEA alginates, xanthan gums, yeast polysaccharides and mixtures thereof.
10. The absorbent article of claim 1, wherein the composition further includes from about 1 to about 10 percent by weight of emulsifying surfactant having a combined HLB in a range greater than 7.
11. The absorbent article of claim 10, wherein the emulsifying surfactant is selected from glyceryl stearate SE, glycol stearate SE, water dispersible metal soaps, polysorbate 20, polysorbate 40, polysorbate 60, polysorbate 80 and mixtures thereof.
12. The absorbent article of claim 1, wherein the composition further includes from about 0.1 to about 30 percent by weight of natural fats or oils.
13. The absorbent article of claim 12, wherein the natural fat or oil is selected from Avocado Oil, Apricot Oil, Babassu Oil, Borage Oil, Camellia Oil, Canola Oil, Castor Oil, Coconut Oil, Corn Oil, Cottonseed Oil, Evening Primrose Oil, Hydrogenated Cottonseed Oil, Hydrogenated Palm Kernel Oil, Maleated Soybean Oil, Meadowfoam

Oil, Palm Kernel Oil, Peanut Oil, Rapeseed Oil, Safflower Oil, Sphingolipids, Sweet Almond Oil, Tall Oil, Lauric Acid, Palmitic Acid, Stearic Acid, Linoleic Acid, Stearyl Alcohol, Lauryl Alcohol, Myristyl Alcohol, Benenyl Alcohol, Rose Hip Oil, Calendula Oil, Chamomile Oil, Eucalyptus Oil, Juniper Oil, Sandlewood Oil, Tea Tree Oil, Sunflower Oil, Soybean Oil and mixtures thereof.

14. The absorbent article of claim 1, wherein the composition further includes from about 0.1 to about 10 percent by weight of sterols or sterol derivatives.

15. The absorbent article of claim 14, wherein the sterol or sterol derivative is selected from cholesterol, sitosterol, stigmasterol, and ergosterol, as well as, C10-C30 cholesterol/lanosterol esters, cholecalciferol, cholesteryl hydroxystearate, cholesteryl isostearate, cholesteryl stearate, 7-dehydrocholesterol, dihydrocholesterol, dihydrocholesteryl octyldecanoate, dihydrolanosterol, dihydrolanosteryl octyldecanoate, ergocalciferol, tall oil sterol, soy sterol acetate, lanasterol, soy sterol, avocado sterols, sterol esters and mixtures thereof.

16. The absorbent article of claim 1, wherein the composition further includes from about 0.1 to about 10 percent by weight of emollient.

17. The absorbent article of claim 16, wherein the emollient is selected from petroleum based oils, petrolatum, mineral oils, alkyl dimethicones, alkyl methicones, phenyl silicones, alkyl trimethylsilanes, dimethicone, lanolin, fatty alcohols and mixtures thereof.

18. The absorbent article of claim 1, wherein the composition further includes from about 0.5 to about 10 percent by weight of a rheology modifier.

19. The absorbent article of claim 18, wherein the rheology modifier is selected from natural clays, synthetic analogs of natural clays, starches, alginates, natural gums and mixtures thereof.

20. An absorbent article comprising:

(a) an outer cover;

(b) a liquid permeable bodyside liner that defines a bodyfacing surface and that is connected in superposed relation to the outer cover;

(c) an absorbent body that is located between the bodyside liner and the outer cover; and

(d) a composition on at least a portion of the bodyfacing surface of the bodyside liner that includes from about 10 to about 90 weight percent of hydrophilic solvent, from about 10 to about 90 percent by weight of high molecular weight polyethylene glycol, from about 0 to about 40 percent by weight of C₁₄ to C₃₀ fatty alcohol, from about 0 to about 40 percent by weight of C₁₄ to C₃₀ fatty acid and from about 0.1 to about 20 percent by weight of decoupling polymer selected from homopolymers of acrylic acid, acrylic acid/maleic acid copolymers, poly(2-hydroxyethylacrylate), polysaccharides, cellulose ethers, polyglycerols, polyacrylamides, polyvinyl alcohol/polyvinyl ether copolymers, poly(sodium vinyl sulfonate), poly(2-sulphato ethyl methacrylate), poly(acrylamidomethyl propane sulphonate) and mixtures thereof.

21. An absorbent article comprising:

(a) an outer cover;

(b) a liquid permeable bodyside liner that defines a bodyfacing surface and that is connected in superposed relation to the outer cover;

(c) an absorbent body that is located between the bodyside liner and the outer cover; and

(d) a composition on at least a portion of the bodyfacing surface of the bodyside liner that includes from about 10 to about 80 percent by weight of hydrophilic solvent, from about 10 to about 90 percent by weight of high molecular weight polyethylene glycol having a molecular weight of at least about 720 daltons, from about 1 to about 30 percent by weight of C₁₄ to C₃₀ fatty alcohol, from about 1 to about 30 percent by weight of C₁₄ to C₃₀ fatty acid, from about 1 to about 10 percent by weight of emulsifying surfactant having a combined HLB in a range greater than 7, from about 0.1 to about 30 percent by weight of natural fats or oils, from about 0.1 to about 10 percent by weight of sterols or sterol derivatives, from about 0.1 to about 10 percent by weight of emollient and from about 0.1 to about 20 percent by weight of decoupling polymer.

22. The absorbent article of claim 21, wherein the composition has a melting point from about 32 °C to about 100 °C.

23. The absorbent article of claim 21, wherein the composition has a high shear viscosity less than about 5,000 centipoise at a temperature greater than about 60°C and has a

low shear viscosity greater than about 50,000 centipoise at a temperature of about 55°C.

24. The absorbent article of claim 21, wherein the composition has a penetration hardness of from about 5 millimeters to about 365 millimeters at 25°C.

25. The absorbent article of claim 21, wherein the composition is on the bodyfacing surface in an amount of from about 0.1 grams per meter squared (g/m²) to about 30 g/m².

26. The absorbent article of claim 21, wherein the hydrophilic solvent of the composition is selected from water, propylene glycol, low molecular weight polyethylene glycol, glycerin, hydrogenated starch hydrolysate, methoxyisopropanol, PPG-2 propyl ether, PPG-2 butyl ether, PPG-2 methyl ether, PPG-3 methyl ether, dipropylene glycol propyl ether, dipropylene glycol butyl ether, dipropylene glycol, methyl propanediol, propylene carbonate, water soluble/dispersible polypropylene glycols, ethoxylated polypropylene glycol, sorbitol, silicone glycols and mixtures thereof.

27. The absorbent article of claim 21, wherein the molecular weight of the high molecular weight polyethylene glycol is from about 720 to about 1,840,000 daltons.

28. The absorbent article of claim 21, wherein the molecular weight of the high molecular weight polyethylene glycol is from about 1,400 to about 440,000 daltons.

29. The absorbent article of claim 21, wherein the fatty alcohol of the composition is selected from cetyl alcohol, stearyl alcohol, arachidyl alcohol, behenyl alcohol and mixtures thereof.

30. The absorbent article of claim 21, wherein the emulsifying surfactant of the composition is selected from glyceryl stearate SE, glycol stearate SE, water dispersible metal soaps, polysorbate 20, polysorbate 40, polysorbate 60, polysorbate 80 and mixtures thereof.

31. The absorbent article of claim 21, wherein the natural fat or oil of the composition is selected from Avocado Oil, Apricot Oil, Babassu Oil, Borage Oil, Camellia Oil, Canola Oil, Castor Oil, Coconut Oil, Corn Oil, Cottonseed Oil, Evening Primrose Oil,

Hydrogenated Cottonseed Oil, Hydrogenated Palm Kernel Oil, Maleated Soybean Oil, Meadowfoam Oil, Palm Kernel Oil, Peanut Oil, Rapeseed Oil, Safflower Oil, Sphingolipids, Sweet Almond Oil, Tall Oil, Lauric Acid, Palmitic Acid, Stearic Acid, Linoleic Acid, Stearyl Alcohol, Lauryl Alcohol, Myristyl Alcohol, Benenyl Alcohol, Rose Hip Oil, Calendula Oil, Chamomile Oil, Eucalyptus Oil, Juniper Oil, Sandlewood Oil, Tea Tree Oil, Sunflower Oil, Soybean Oil and mixtures thereof.

32. The absorbent article of claim 21, wherein the sterol or sterol derivative of the composition is selected from cholesterol, sitosterol, stigmasterol, and ergosterol, as well as, C10-C30 cholesterol/lanosterol esters, cholecalciferol, cholesteryl hydroxystearate, cholesteryl isostearate, cholesteryl stearate, 7-dehydrocholesterol, dihydrocholesterol, dihydrocholesteryl octyldecanoate, dihydrolanosterol, dihydrolanosteryl octyldecanoate, ergocalciferol, tall oil sterol, soy sterol acetate, lanasterol, soy sterol, avocado sterols, sterol esters and mixtures thereof.

33. The absorbent article of claim 21, wherein the emollient of the composition is selected from petroleum based oils, petrolatum, mineral oils, alkyl dimethicones, alkyl methicones, phenyl silicones, alkyl trimethylsilanes, dimethicone, lanolin, fatty alcohols and mixtures thereof.

34. The absorbent article of claim 21, wherein the decoupling polymer of the composition is selected from homopolymers of acrylic acid, acrylic acid/maleic acid copolymers, poly(2-hydroxyethylacrylate), polysaccharides, cellulose ethers, polyglycerols, polyacrylamides, polyvinyl alcohol/polyvinyl ether copolymers, poly(sodium vinyl sulfonate), poly(2-sulphato ethyl methacrylate), poly(acrylamidomethyl propane sulphonate) and mixtures thereof.

35. The absorbent article of claim 21, wherein the composition further includes from about 1 to about 20 percent by weight of a viscosity enhancer.

36. The absorbent article of claim 35, wherein the viscosity enhancer is selected from acrylamides copolymers, agar, gelatin, water dispersible metal soaps, butoxy chitosan, carboxymethyl cellulose, hydrated silica, kelp, magnesium silicate, alumina magnesium silicate, smectite, organomodified clays, methyl cellulose, PEG crosspolymer, polyvinyl alcohols, sodium acrylates copolymers, partially crosslinked

polyacrylic acid polymers, TEA alginates, xanthan gums, yeast polysaccharides and mixtures thereof.

37. The absorbent article of claim 21, wherein the composition further includes from about 0.5 to about 10 percent by weight of a rheology modifier.

38. The absorbent article of claim 37, wherein the rheology modifier is selected from natural clays, synthetic analogs of natural clays, alginates, starches, natural gums and mixtures thereof.

39. An absorbent article comprising:

- (a) an outer cover;
- (b) a liquid permeable bodyside liner that defines a bodyfacing surface and that is connected in superposed relation to the outer cover;
- (c) an absorbent body that is located between the bodyside liner and the outer cover; and
- (d) a composition on at least a portion of the bodyfacing surface of the bodyside liner that includes from about 10 to about 90 percent by weight of hydrophilic solvent, from about 10 to about 90 percent by weight of high molecular weight polyethylene glycol having a molecular weight of at least about 720 daltons, from about 1 to about 30 percent by weight of a C₁₄ to C₃₀ fatty alcohol, from about 1 to about 30 percent by weight of a C₁₄ to C₃₀ fatty acid, from about 1 to about 10 percent by weight of emulsifying surfactant having a combined HLB in a range greater than 7, from about 0.1 to about 30 percent by weight of natural fats or oils, from about 0.1 to about 10 percent by weight of sterols or sterol derivatives, from about 0.1 to about 10 percent by weight of emollient and from about 0.1 to about 20 percent by weight of decoupling polymer selected from homopolymers of acrylic acid, acrylic acid/maleic acid copolymers, poly(2-hydroxyethylacrylate), polysaccharides, cellulose ethers, polyglycerols, polyacrylamides, polyvinyl alcohol/polyvinyl ether copolymers, poly(sodium vinyl sulfonate), poly(2-sulphato ethyl methacrylate), poly(acrylamidomethyl propane sulphonate) and mixtures thereof.

40. A method of applying a composition to a bodyfacing surface of a bodyside liner of an absorbent article comprising the steps of:

- (a) heating a composition comprising hydrophilic solvent, high molecular weight polyethylene glycol, C₁₄ to C₃₀ fatty alcohol, C₁₄ to C₃₀ fatty acid and from about 0.1 to about 20 percent by weight of decoupling polymer selected from homopolymers of acrylic acid, acrylic acid/maleic acid copolymers, poly(2-hydroxyethylacrylate), polysaccharides, cellulose ethers, polyglycerols, polyacrylamides, polyvinyl alcohol/polyvinyl ether copolymers, poly(sodium vinyl sulfonate), poly(2-sulphato ethyl methacrylate), poly(acrylamidomethyl propane sulphonate) and mixtures of such compounds, to a temperature above the melting point of the composition, the composition having a melting point of from about 32° C to about 100° C;
- (b) applying the composition to the bodyfacing surface of a bodyside liner of an absorbent article; and
- (c) resolidifying the composition.
41. The method of claim 40, wherein after the step of resolidification, the composition has a low shear viscosity of greater than about 50,000 centipoise.
42. The method of claim 40, wherein after the step of heating, the composition is applied by spraying.
43. The method of claim 40, wherein after the step of heating, the composition is applied by slot coating.
44. The method of claim 40, wherein after the step of heating, the composition is applied by printing.
45. The method of claim 40, wherein the hydrophilic solvent of the composition is from about 10 to about 90 percent by weight of the composition and is selected from water, propylene glycol, low molecular weight polyethylene glycol, glycerin, hydrogenated starch hydrolysate, methoxyisopropanol, PPG-2 propyl ether, PPG-2 butyl ether, PPG-2 methyl ether, PPG-3 methyl ether, dipropylene glycol propyl ether, dipropylene glycol butyl ether, dipropylene glycol, methyl propanediol, propylene carbonate, water soluble/dispersible polypropylene glycols, ethoxylated polypropylene glycol, sorbitol, silicone glycols and mixtures thereof.

46. The method of claim 40, wherein the high molecular weight polyethylene glycol is from about 10 to about 90 percent by weight of the composition and is selected from polyethylene glycols having a molecular weight of from about 720 to about 1,840,000 daltons.

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47. The method of claim 40, wherein the fatty alcohol of the composition is from about 0 to about 40 percent by weight of the composition and is selected from cetyl alcohol, stearyl alcohol, arachidyl alcohol, behenyl alcohol and mixtures thereof.

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48. The method of claim 40, wherein the composition further includes from about 0.1 to about 40 percent by weight of viscosity enhancer selected from acrylamides copolymers, agar, gelatin, water dispersible metal soaps, butoxy chitosan, carboxymethyl cellulose, hydrated silica, kelp, magnesium silicate, alumina magnesium silicate, smectite, organomodified clays, partially crosslinked polyacrylic acid polymers, methyl cellulose, PEG crosspolymer, polyvinyl alcohols, sodium acrylates copolymers, TEA alginates, xanthan gums, yeast polysaccharides and mixtures thereof.

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49. The method of claim 40, wherein the composition further includes from about 1 to about 10 percent by weight of emulsifying surfactant having a combined HLB in a range greater than 7 selected from glyceryl stearate SE, glycol stearate SE, water dispersible metal soaps, polysorbate 20, polysorbate 40, polysorbate 60, polysorbate 80 and mixtures thereof.

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50. The method of claim 40, wherein the composition further includes from about 0.1 to about 30 percent by weight of natural fats or oils selected from Avocado Oil, Apricot Oil, Babassu Oil, Borage Oil, Camellia Oil, Canola Oil, Castor Oil, Coconut Oil, Corn Oil, Cottonseed Oil, Evening Primrose Oil, Hydrogenated Cottonseed Oil, Hydrogenated Palm Kernel Oil, Maleated Soybean Oil, Meadowfoam Oil, Palm Kernel Oil, Peanut Oil, Rapeseed Oil, Safflower Oil, Sphingolipids, Sweet Almond Oil, Tall Oil, Lauric Acid, Palmitic Acid, Stearic Acid, Linoleic Acid, Stearyl Alcohol, Lauryl Alcohol, Myristyl Alcohol, Benenyl Alcohol, Rose Hip Oil, Calendula Oil, Chamomile Oil, Eucalyptus Oil, Juniper Oil, Sandlewood Oil, Tea Tree Oil, Sunflower Oil, Soybean Oil and mixtures thereof.

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51. The method of claim 40, wherein the composition further includes from about 0.1 to about 10 percent by weight of sterols or sterol derivatives selected from cholesterol,

5 sitosterol, stigmasterol, and ergosterol, as well as, C10-C30 cholesterol/lanosterol esters, cholecalciferol, cholesteryl hydroxystearate, cholesteryl isostearate, cholesteryl stearate, 7-dehydrocholesterol, dihydrocholesterol, dihydrocholesteryl octyldecanoate, dihydrolanosterol, dihydrolanosteryl octyldecanoate, ergocalciferol, tall oil sterol, soy sterol acetate, lanasterol, soy sterol, avocado sterols, sterol esters and mixtures thereof.

10 52. The method of claim 40, wherein the composition further includes from about 0.1 to about 10 percent by weight of emollient selected from petroleum based oils, petrolatum, mineral oils, alkyl dimethicones, alkyl methicones, phenyl silicones, alkyl trimethylsilanes, dimethicone, lanolin, fatty alcohols and mixtures thereof.

15 53. The method of claim 40, wherein the composition further includes from about 0.5 to about 10 percent by weight of a rheology modifier selected from natural clays, synthetic analogs of natural clays, starches, alginates, natural gums and mixtures thereof.

20 54. A method for protecting the skin barrier on a skin surface of a user, comprising the steps of:

a) contacting the skin surface of the user with a bodyfacing surface of a liner material, the bodyfacing surface having a composition comprising a hydrophilic solvent, a high molecular weight polyethylene glycol, a C₁₄-C₃₀ fatty alcohol, a C₁₄-C₃₀ fatty acid and a decoupling polymer;

25 b) maintaining the bodyfacing surface in contact with the skin surface for a sufficient amount of time to transfer the composition to the skin surface; and

c) repeating the contact of the skin surface with the bodyfacing surface of the liner material for a sufficient period of time to protect the skin barrier,

30 wherein the composition comprises from about 10 to about 90 percent by weight of hydrophilic solvent, from about 10 to about 90 percent by weight of high molecular weight polyethylene glycol, from about 1 to about 40 percent by weight of a C₁₄ to C₃₀ fatty alcohol, from about 1 to about 40 percent by weight of a C₁₄ to C₃₀ fatty acid and from about 0.1 to about 20 percent by weight of a decoupling polymer selected from homopolymers of acrylic acid, acrylic acid/maleic acid copolymers, poly(2-hydroxyethylacrylate), polysaccharides, cellulose ethers,

35 polyglycerols, polyacrylamides, polyvinyl alcohol/polyvinyl ether copolymers,

poly(sodium vinyl sulfonate), poly(2-sulphato ethyl methacrylate),
poly(acrylamidomethyl propane sulphonate) and mixtures thereof.

55. The method of claim 54, wherein the composition has a melting point from about 32°C
5 to about 100°C.
56. The method of claim 54, wherein the composition has a high shear viscosity less than
about 5,000 centipoise at a temperature greater than about 60°C and has a low shear
viscosity greater than about 50,000 centipoise at a temperature of about 55°C.
- 10 57. The method of claim 54, wherein the composition has a penetration hardness of from
about 5 millimeters to about 365 millimeters at 25°C.